IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	Atty. Docket
HERMAN P. VAN DER KALL ET AL.	PHNL 020151
Serial No.: 10/505,270	Group Art Unit: 2627
Filed: August 20, 2004	Examiner: G.R. Patel

OPTICAL DISC DRIVE, AND METHOD FOR OPERATING AN OPTICAL DISC DRIVE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF

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(i) Real Party in Interest

The real party in interest in this application is KONINKLIJKE PHILIPS ELECTRONICS N.V. by virtue of an assignment from the inventors recorded on February 13, 2006, at Reel 017548, Frames 0291.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of Claims

Claims 1 and 15 have been cancelled; Claims 2-7 and 9-14 stand finally rejected by the Examiner; and Claim 8 has been found allowable by the Examiner. Appellants hereby appeal the rejection of claims 2-7 and 9-14.

(iv) Status of Amendments

There was one Response filed on April 7, 2008, after final rejection of the claims on February 7, 2008, this Response having been considered by the Examiner.

(v) Summary Of Claimed Subject Matter

The subject invention relates to a method of operating a disc drive having a semi-conductor laser device. In particular, as claimed in claim 2, the method includes "applying electrical power to said semi-conductor laser device". This is shown in Fig. 6, and described in the Substitute Specification on page 6, paragraph [0024], lines 14-18, where in step 61, the control unit 5 generates a laser control voltage, and at step 62 applies the laser control voltage to the semi-conductor laser device 3.

The method further includes the step "measuring a light intensity of a laser beam generated by said semi-conductor laser device". This is shown in Fig. 6, and described in the Substitute Specification on page 6, paragraph [0024], lines 18-20, where in step 63, the control unit 5 uses the light detector 6 to detect the light intensity of the light beam from the semi-conductor laser device 3.

In addition, the method includes the step "controlling said electrical power such that said light intensity remains constant". This is shown in Fig. 6, and described in the Substitute Specification on page 6, paragraph [0024], lines 20-26, in which the control unit 5, at steps 64-67, controls the laser control voltage applied to the semi-conductor laser 3 such that the light intensity remain constant.

Furthermore, the method of the subject invention includes "measuring at least one electrical parameter (VCL; I) indicative of the work point (W) of said semi-conductor laser device". This is

shown in Fig. 6, and described in the Substitute Specification on page 6, paragraph [0025], line 27 to page 7, line 1, in which the control unit 5, at step 68, measures the electrical parameters applied to the semi-conductor laser 3.

Finally, the method includes "determining an operational temperature of said semi-conductor laser device on the basis of a predetermined relationship between said work point and said operational temperature". This is described in the Substitute Specification on page 7, paragraph [0025], lines 1-2, where the control unit 5 determines the temperature using the measured electrical parameters, and on page 6, paragraph [0023], lines 7-11, where it is disclosed that the relationship between the electrical parameters and the temperature is a fixed relationship.

As claimed in claim 3, the method of the subject invention further includes "taking temperature reducing steps if the measured value of said at least one electrical parameter indicates that the operational temperature of the laser device has reached a predetermined critical temperature". This is shown in Fig. 6, and described in the Substitute Specification on page 7, paragraph [0025], lines 2-6, where at step 70, the control unit 5 determines whether the temperature exceed a predetermined critical temperature, and if so, at step 71, institutes temperature reduction steps.

As claimed in claim 4, the measuring step is defined as "measuring a plurality of electrical parameters indicative of the work point of said semi-conductor laser device". This is described

in the Substitute Specification on page 7, paragraph [0026], lines 11-12.

In addition, as claimed in claim 4, "said temperature reducing steps are taken if at least one of said plurality of electrical parameters indicates that the operational temperature of the laser device has reached a predetermined critical temperature". This is described in the Substitute Specification on page 7, paragraph [0026], lines 12-16.

In the method of the subject invention, as claimed in claim 5, "the at least one electrical parameter is compared with a predetermined parameter level". This is shown in Fig. 4, and described in the Substitute Specification on page 8, paragraph [0031], lines 12-15.

Further, in the method as claimed in claim 6, the invention includes the limitation "wherein said electrical parameter is measured at a certain known temperature of the laser device, this measured value being taken as zero value". This is described in the Substitute Specification on page 12, paragraph [0039], lines 1-6.

In addition, claim 6 includes the limitation "wherein said electrical parameter is measured during operation of the disc drive to yield an actual value". This is described in the Substitute Specification on page 12, paragraph [0039], lines 6-8.

Finally, claim 6 includes the limitation "wherein the difference between the actual value of said electrical parameter and said zero value is compared with a predetermined threshold".

This is described in the Substitute Specification on page 12, paragraph [0039], lines 8-12.

Furthermore, as claimed in claim 7, the subject invention includes the limitation "wherein said temperature reducing steps comprise, the step of operating a cooling device or a ventilator, or the step of reducing a clock frequency, or the step of reducing a rotational speed of a motor of said disc drive". This is described in the Substitute Specification at page 7, paragraph [0027], lines 17-22.

The subject invention also relates to a disc drive, which, as claimed in claim 9, includes "a disc drive motor for rotating an optical disc". This is shown in Fig. 1, and described in the Substitute Specification on page 2, paragraph [0015], lines 24-25, in which an electric motor 2 rotates the disc 10.;

In addition, the disc drive includes "a laser device for generating a laser beam for scanning the optical disc". This is shown in Fig. 1, and described in the Substitute Specification on page 2, paragraph [0015], lines 25-28, wherein a laser device 3 generates a laser beam 4 for scanning the optical disc 10.

Furthermore, the disc drive includes "a control unit for controlling the disc drive motor and the laser device". This is shown in Fig. 1, and described in the Substitute Specification on page 2, paragraph [0015], line 28 to page 3, line 3.

Finally, the disc drive, as claimed in claim 9, includes the limitation "wherein the control unit monitors at least one electrical parameter indicative of a work point of a semi-conductor

laser of said laser device, and takes laser device temperature affecting steps in dependence on said at least one electrical parameter". This is described in the Substitute Specification on page 6, paragraph [0025], line 27 to page 7, line 8.

The disc drive as claimed in claim 10, includes the limitation "wherein the control unit controls the rotational speed of said disc drive motor in dependence on said at least one electrical parameter". This is described in the Substitute Specification on page 8, paragraph [0030], line 5, through page 9, paragraph [0033], line 21.

The subject invention, as claimed in claim 11, further includes "a light intensity sensor coupled to an input of the control unit, said light intensity sensor receiving at least a portion of the laser beam generated by the semi-conductor laser, said light intensity sensor generating a measuring signal representative of the light intensity of said laser beam". This is shown in Fig. 2, and described in the Substitute Specification on page 5, paragraph [0022], lines 6-12, where a light detector 7 senses the intensity of the laser beam from the semi-conductor laser device 3, and applies a detector signal to the control unit 5.

In addition, as claimed in claim 11, "the control unit controlling said semi-conductor laser in response to said measuring signal such as to maintain a constant laser beam intensity". This is described in the Substitute Specification on page 5, paragraph [0022], lines 13-18.

The subject invention, as claimed in claim 12, includes the limitation "wherein said at least one electrical parameter comprises an output voltage of the control unit". This is described in the Substitute Specification on page 5, paragraph [0022], lines 23-24.

As claimed in claim 13, the subject invention includes "said at least one electrical parameter comprises a difference between an actual value of the output voltage of the control unit and a zero value of said output voltage of the control unit measured at a certain known temperature of the laser device". This is described in the Substitute Specification on page 12, paragraph [0039], lines 1-6.

In addition, as claimed in claim 14, the subject invention includes "a plurality of semi-conductor lasers". This is shown in Fig. 5, and described in the Substitute Specification on page 10, paragraph [0035], lines 3-5.

Furthermore, "the control unit has a plurality of outputs each providing a corresponding control signal to a corresponding one of said semi-conductor lasers". This is shown in Fig. 5, and described in the Substitute Specification on page 10, paragraph [0035], lines 5-9.

Finally, as claimed in claim 14, "the control unit monitors a single signal indicative of a work point of only one of said semi-conductor lasers, and takes laser device temperature affecting steps in dependence on said single threshold voltage indicating

signal". This is described in the Substitute Specification on page 11, paragraph [0036], lines 6-13.

(vi) Grounds of Rejection to be Reviewed on Appeal

(A) Whether the invention, as claimed in claims 2-7 and 9-14, is anticipated, under 35 U.S.C. 102(b), by U.S. Patent 5,987,044 to Odegawa et al.

(vii) Arguments

35 U.S.C. 102(b) states:

"A person shall be entitled to a patent unless -
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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States,...."

(A) Whether Claims 2-7 And 9-14 Are Anticipated By Odegawa et al.

The Odegawa et al. patent discloses s semiconductor light source system having an optimized setting for driving a laser diode, in which optimal operating parameters, including operating temperature, of a laser diode are determined empirically, and means are provided to restrict the driving parameters of the laser diode such that the laser diode theoretically remains within its optimum operating parameters.

The subject invention relates to controlling a semiconductor laser in a disk drive such that the temperature of the semiconductor laser does not exceed a critical temperature.

As noted in MPEP §2131, it is well-founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v.*

Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The subject invention, as claimed in claim 2, includes the limitations "measuring a light intensity of a laser beam generated by said semi-conductor laser device", "measuring at least one electrical parameter (VCL; I) indicative of the work point (W) of said semi-conductor laser device"; and "determining an operational temperature of said semi-conductor laser device on the basis of a predetermined relationship between said work point and said operational temperature".

The Examiner has indicated that this limitations is found in Odegawa et al. and states "temperature measurement indirectly measures intensity of light" of a laser beam generated by said semi-conductor laser device.

Appellants have read Odegawa et al. in its entirety, and nowhere is there any mention of measuring the temperature of the semiconductor laser, nor is there any mention of measuring a light intensity. In fact, there is no mention in Odegawa et al. of measuring any parameter. Rather, the driving means for the semiconductor laser are arranged such that they provide the bias current and the signal current only at such levels as would assure operation of the semiconductor laser within the predetermined temperature limitations.

Appellants note that the Examiner makes mention of various sections of Odegawa et al. and implies that the limitations of claim 2 are found therein. However, Applicants believe that the

Examiner is mistaken. In particular, col. 3, lines 31-63, merely paraphrases claim 1 of Odegawa et al. and states that the semiconductor optical source includes a laser diode, biasing means for supplying a bias current; drive means for producing a signal current, and feeding means for combining the bias current with the signal current. Odegawa et al. then indicates limitations placed on the bias means and the drive means, however, there is no disclosure of means for measuring anything. At col. 4, line 38 to col. 5, line 25, Odegawa et al. describes in detail a diagram of Fig. 4 showing the relationship between the drive current, the bias current and an operational temperature of a semiconductor laser diode. Again, there is no disclosure or suggestion of actually measuring anything. At col. 6, line 54 to col. 7, line 9, Odegawa et al. describes a diagram of Fig. 6 in which optimized values of the bias current and drive currents are shown. Again, there is no disclosure of actually measuring any parameter during use of the semiconductor laser.

Appellants therefore assert that Odegawa et al. does not show or suggest "each and every element as set forth in the claim", nor does Odegawa et al. show "The identical invention ... in as complete detail as is contained in the ... claim."

Based on the above arguments, Appellants believe that the subject invention is neither anticipated nor rendered obvious by the prior art and is patentable thereover. Therefore, Appellants respectfully request that this Board reverse the decision of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by /Edward W. Goodman/
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(viii) Claims Appendix

2. (Previously Presented) A method of operating a disc drive having a semi-conductor laser device, the method comprising the steps of:

applying electrical power to said semi-conductor laser device;

measuring a light intensity of a laser beam generated by said semi-conductor laser device;

controlling said electrical power such that said light intensity remains constant;

measuring at least one electrical parameter (VCL; I) indicative of the work point (W) of said semi-conductor laser device; and

determining an operational temperature of said semi-conductor laser device on the basis of a predetermined relationship between said work point and said operational temperature.

3. (Previously Presented) The method of operating a disc drive as claimed in claim 2, wherein the method further comprises the step of:

taking temperature reducing steps if the measured value of said at least one electrical parameter indicates that the operational temperature of the laser device has reached a predetermined critical temperature.

4. (Previously Presented) The method as claimed in claim 3,

wherein said step of measuring at least one electrical parameter comprises measuring a plurality of electrical parameters indicative of the work point of said semi-conductor laser device,

and wherein said temperature reducing steps are taken if at least one of said plurality of electrical parameters indicates that the operational temperature of the laser device has reached a predetermined critical temperature.

5. (Previously Presented) The method as claimed in claim 3, wherein the at least one electrical parameter is compared with a predetermined parameter level.

6. (Previously Presented) The method as claimed in claim 5,

wherein said electrical parameter is measured at a certain known temperature of the laser device, this measured value being taken as zero value,

wherein said electrical parameter is measured during operation of the disc drive to yield an actual value,

and wherein the difference between the actual value of said electrical parameter and said zero value is compared with a predetermined threshold.

7. (Previously Presented) The method as claimed in any one of claims 3-6, wherein said temperature reducing steps comprise, the step of operating a cooling device or a ventilator, or the step of

reducing a clock frequency, or the step of reducing a rotational speed of a motor of said disc drive.

9. (Previously Presented) A disc drive comprising:

a disc drive motor for rotating an optical disc;

a laser device for generating a laser beam for scanning the optical disc; and

a control unit for controlling the disc drive motor and the laser device,

wherein the control unit monitors at least one electrical parameter indicative of a work point of a semi-conductor laser of said laser device, and takes laser device temperature affecting steps in dependence on said at least one electrical parameter.

10. (Previously Presented) The disc drive as claimed in claim 9, wherein the control unit controls the rotational speed of said disc drive motor in dependence on said at least one electrical parameter.

11. (Previously Presented) The disc drive as claimed in claim 9 or 10, wherein said disc drive further comprises:

a light intensity sensor coupled to an input of the control unit, said light intensity sensor receiving at least a portion of the laser beam generated by the semi-conductor laser, said light intensity sensor generating a measuring signal representative of the light intensity of said laser beam;

the control unit controlling said semi-conductor laser in response to said measuring signal such as to maintain a constant laser beam intensity.

12. (Previously Presented) The disc drive as claimed in claim 11, wherein said at least one electrical parameter comprises an output voltage of the control unit.

13. (Previously Presented) The disc drive as claimed in claim 11, wherein said at least one electrical parameter comprises a difference between an actual value of the output voltage of the control unit and a zero value of said output voltage of the control unit measured at a certain known temperature of the laser device.

14. (Previously Presented) The disc drive as claimed in claim 9, wherein said disc drive comprises a plurality of semi-conductor lasers;

wherein the control unit has a plurality of outputs each providing a corresponding control signal to a corresponding one of said semi-conductor lasers;

and wherein the control unit monitors a single signal indicative of a work point of only one of said semi-conductor lasers, and takes laser device temperature affecting steps in dependence on said single threshold voltage indicating signal.

(ix) Evidence Appendix

There is no evidence which had been submitted under 37 C.F.R. 1.130, 1.131 or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this Appeal.

(x) Related Proceedings Appendix

Since there were no proceedings identified in section (ii) herein, there are no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.